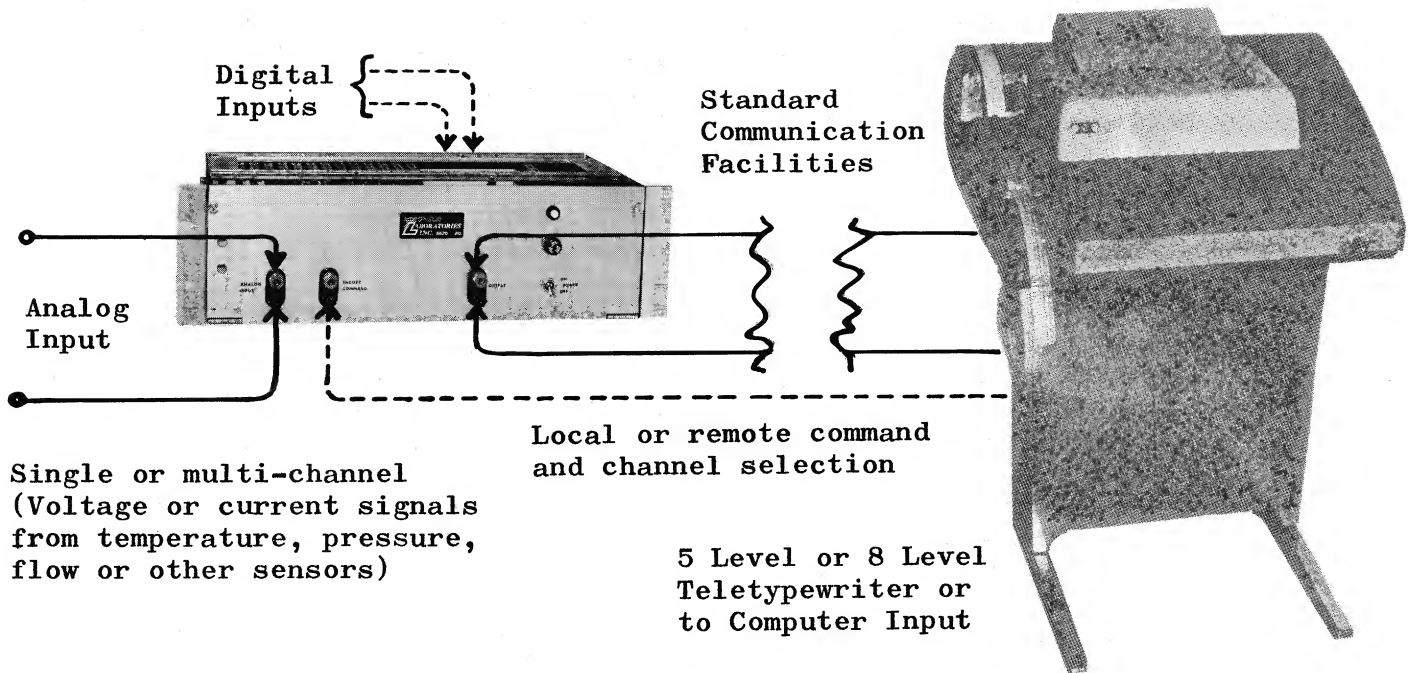


ANALOG to TELETYPEWRITER

DATA TRANSMITTERS

DT 101, 102, 103



The Towson Laboratories Data Transmitters are designed for communicating electrical measurements representing pressure, temperature, liquid level, flow, etc., over standard network facilities providing economical printed or punched tape records and/or control functions.

Available accessories or optional features provide a highly flexible data or control system using established communications facilities and equipment. Among the features offered are:

- . Single or multi-channel analog input
- . Direct temperature measurements with standard resistance temperature sensors
- . 5 Level Baudot or 8 Level ASCII codes
- . Local or centralized sampling command and channel selection
- . Operation in conjunction with a local teletypewriter or as an isolated unit
- . Provision for digital inputs on special order



Designers and manufacturers of CAPCODER and CAPLEXER Capacitive Charge devices

TOWSON LABORATORIES, INC.

3500 PARKDALE AVE. • BALTIMORE, MD. 21211 • AREA CODE 301 367-4001

GENERAL CHARACTERISTICS

All models provide a two wire serial output compatible with teletypewriter facilities. Upon command the DT102 and DT103 units produce a "SPACE" character moving the carriage one printing space followed by three or more characters carrying the numerical data. The DT101 is intended for computer data entry and supplies only one character or data message each time it is commanded.

CODE FORMAT

- DT101: For use with 8-level code computer systems. Output is 11 bits (Computer Input) composed of a START (space) bit followed by 8 data bits (binary code) and ending with two STOP (mark) bits. Normal bit rate is 12,000 per second, lower rates available on special order. Provides up to 1,000 encodings per second at maximum bit rate.
- DT102: For use with eight level code teletypewriters (For example Teletype * (ASC II Code) Models 33 and 35). Output is series of 11 bit codes spacing printer carriage and then printing numerals. Either two, three or modified four decimal digit units are available. Analog input sampling rates up to 3 per second or higher as limited by readout facilities.
- DT103: For use with 5 level code teletypewriters (For example Teletype * (Baudot Code) Models 28, 32 etc.). Output is series of 8 unit codes to provide same numerical printing operation as DT102. Up to 2.34 samples per second of analog input or higher depending upon readout equipment.

PHYSICAL CONSTRUCTION

Standard 19" rack panel unit $5\frac{1}{4}$ " high by 12" deep; can be installed within base of Model 32, 33 or 35 Teletype Corp. units using suitable accessories.

POWER REQUIREMENTS

115 volts $\pm$ 10 volts, 60 cps, single phase, approximately 25 watts (not including teletypewriter).

CONNECTORS

Terminal strips and power connector on rear. Duplicate banana plug connectors on front panel for all input-output signals. When unit is installed in teletypewriter console all connections are via terminal block.

* Teletype is the registered trademark of the Teletype Corp., Skokie, Illinois.



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ELECTRICAL SPECIFICATIONS

ANALOG INPUT

RANGE:

0 to +1 volt or greater; bipolar models available. Provision for standard 4-20 ma. or other current inputs also available.

INPUT RESISTANCE:

Over 1 Megohm for voltage input models of DT102 and DT103; 10,000 ohms for DT101.

CIRCUIT:

Input circuit is a low pass RC filter with a time constant of approximately 16 milliseconds for DT102 and DT103 or 0.2 millisecond for DT101.

MULTI-CHANNEL:

Accessory boards are available for relay or transistor switching of inputs. Can be operated sequentially or on an addressed basis using "Stunt Box" of function operations of Teletype* equipment.

TEMPERATURE/RESISTANCE:

A special accessory board (BD1000) is available to provide excitation and bridge completion parts for 100 ohm platinum or nickel sensors.

SYNCHRONIZATION

LOCAL COMMAND:

An external contact closure or positive pulse initiates sampling and encoding of one complete message. Repetitive operation can be provided as an accessory.

REMOTE COMMAND:

If teletypewriter is equipped with "Stunt Box" or sequential selector, unit can be remotely operated using "call directing codes".

OUTPUT SIGNALS

TYPE:

Solid state telegraph relay, DC keying.

OPTIONS:

- (a) 120 volt either polarity, neutral keying, 100 ma. maximum.
- (b) 60 volt polar keying, 100 ma. maximum.

SIGNAL BATTERY:

External, supplied by the teletype station depending on the requirements of the keying mode.



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MODULATION RATES:

45, 50, 57 or 75 bauds for DT102 and DT103; up to 1,000 bauds for DT101

EIA STANDARDS:

Output data and control circuits can be supplied to operate with the interchange signals recommended by the Electronic Industries Association in their document R. S. 232A, "Interface Between Data Processing Terminal Equipment and Data Communication Equipment".

ACCURACY (including resolution)**DT101:**

0.6% of full scale (256 codes)

DT102 & DT103:

1.2% of full scale for 2 digit unit (0 to 99)

0.15% of full scale for 3 digit unit (0 to 999)

Modified 4 digit models are available with resolution of 1/1500 or 1/2000 and full scale outputs of 0 to 1500 or 0 to 9995 respectively.

TYPICAL OPTIONS OR ACCESSORIES TO BE CONSIDERED AND SPECIFIED WHEN ORDERING

Variation	Available or Applicable on		
	DT101	DT102	DT103
1. Full scale input (0 to +1 volt standard)	X	X	X
2. Bipolar input or current input	X	X	X
3. Single or multiple input channels and quantity	X	X	X
4. Two, three or more decimal digits		X	X
5. Digital input provisions		X	X
6. Neutral or polar telegraph relay		X	X
7. E I A RS232A Interchange Signals	X	X	X
8. System modulation or baud rate		X	X
9. Transmission bit rate	X		
10. Single command or repetitive sampling	X	X	X
11. Temperature sensor excitation, BD1000	X	X	X
12. Separation unit or for installation in printer stand	X	X	X

Specifications are subject to change without notice.

189-5-65-4M



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TOWSON LABORATORIES , INC.

3500 PARKDALE AVENUE • BALTIMORE, MARYLAND 21211 • AREA CODE 301-367-4001

PRICE AND DELIVERY OF STANDARD PRODUCTS ARE AS FOLLOWS: (Prices are subject to change without notice)

<u>QUAN.</u>	<u>MODEL</u>	<u>PRICE</u>	<u>DELIVERY</u>
1	OC3100 (8 bits)	\$ 650.00	Small quan. from stk.
1	OC3100B (10 bits)	\$ 670.00	Small quan. from stk.
1	OC3101C-a (BCD - 2 digit)	\$ 850.00	30 days
1	OC3101C-b (BCD - 3 digit)	\$ 890.00	30 days
1	OC3101D-o (BCD - Bipolar 3 digit)	\$1,300.00	60 days
1	OM3100-4 (Relay-Mltpx)	\$ 200.00	30 days
1	OM3101-4 (Transistor-Mltpx)	\$ 300.00	30 days
1	PM3100 (Mltpx-Pgm-Relay)	\$ 350.00/8 Chan.	30 days
1	PM3101 (Mltpx-Pgm-Trans.)	\$ 120.00/4 Chan.	30 days
1	PM2000A-o (Mltpx-Clock-A/D Command)	\$ 225.00	30 days
1	OC3200 (8 bits)	\$ 350.00	Small quan. from stk.
	Added stages	\$ 25.00/bit	
	Output gating	\$ 5.00/bit	
	Gray code output (OC3201)	\$ 100.00/reg.	
	Polarity complementing (OC3202)	\$ 65.00/reg.	
1	OC3300-8 (D/A)	\$ 450.00	60 days
1	OC3300A-10	Request quote	
1	OC3300A-12 (3 digit BCD)	Request quote	
1	OC3400 (Sample & Hold)	\$ 390.00	60 days
1	BD1000 (Bridge Driver)	\$ 400.00	60 days
1	RH1000A-o (Rack housing & power supply)	\$ 500.00	30 days
	Add for each plug-in board (wiring & sockets)	\$ 20.00/bd.	
1	DT101 (8 Level-binary)	Request quote	
1	DT102 (8 Level-ASCII)	\$2,850.00	From stk. or 60 days
1	DT103 (5 Level)	\$3,050.00	From stk. or 60 days
1	DR100P-35 (Invac-binary)	\$3,700.00	60 days
1	DR101P-35 (Invac-BCD)	\$3,900.00	60 days
1	DR100P-150 (Tally-binary)	\$6,420.00	60 days
1	DR101P-150 (Tally-BCD)	\$6,620.00	60 days

All prices are f.o.b. Baltimore, Maryland.
Terms are net 30 days
Quantity discounts are available.
Shipment from stock in not more than 14 days.



ANALOG-DIGITAL CONVERTERS & MULTIPLEXERS

(CAPCODERS AND CAPLEXERS)

DIGITAL TELEMETERING & DATA SYSTEMS

Simplified, highly reliable, solid state devices

Plug-in components: Low cost; calibrated over 0-50°C

FUNCTION	MODEL	INPUT	SAMPLING RATE	ACCURACY INCLUDING RESOLUTION	GENERAL CHARACTERISTICS
A/D — Binary	OC3100	$\pm 100\text{mv}$ & up; $10,000 \Omega/\text{v}$	0-1200/sec.	8 bit —0.6%	Serial output; pulse train, MSD or sign first; 1's & 0's on separate output lines. Bipolar OC3101A
A/D — Binary	OC3100A	$\pm 0.5\text{v}$ & up; $10,000 \Omega/\text{v}$	0-1000/sec.	10 bit —0.15%	
A/D — BCD	OC3101	0 to $+1\text{v}$; $5,000 \Omega/\text{v}$	0-1500/sec.	2 digit —1.2%	
A/D — BCD	OC3101A	0 to $+1\text{v}$; $5,000 \Omega/\text{v}$	0-1000/sec.	3 digit —0.15%	
A/D — BCD	OC3101B	0 to $\pm 0.5\text{v}$; $10,000 \Omega/\text{v}$	0-1000/sec.	0.15%	
Multiplexer Switches 4-Reed Relay 4-Transistor Switch	OM3100-4 OM3101-4	Same as A/D Same as A/D	0-200/sec. 0-10,000/sec.	Included in A/D specification	Includes switch driver. Offset & scale adjustment available.
Multiplexer Programmer	PM3100	Clock pulses, up to 200/sec.			Reed relay sequencer.
Multiplexer Programmer	PM3101	Clock pulses, up to 10,000/sec.			Transistor switch sequencer.
Serial-Parallel Register	OC3200	A/D data, 12,000 Bits/sec.			Gated or ungated outputs.
Serial-Parallel Register	OC3201	A/D data, 12,000 Bits/sec.			Gray code output.
Serial-Parallel Register	OC3202	A/D data, 12,000 Bits/sec.			Sign & magnitude output.
D/A	OC3300-8	Parallel data from OC3200 Register or equivalent	0-30,000/sec.	8 bit —0.4%	Output $\pm 2.5\text{v}$ or $\pm 10\text{v}$ to 500 ohm load.
D/A	OC3300A-10		0-30,000/sec.	10 bit —0.1%	Holds to 0.5% for 100 milliseconds or 0.1% for 20 milliseconds.
D/A	OC3300A-12		0-30,000/sec.	3 BCD —0.1%	
D/A — Sample & Hold	OC3400		0-30,000/sec.		
Bridge Driver	BD1000	Clock pulse	0-10/sec.	Sufficient for use with 10 bit A/D	Excitation for resistance temperature sensor.

Airborne models, small, rugged, wider temperature limits

A/D — Binary	OC1001 (100 in. ³)	$\pm 2.5\text{v}$; > 1 megohm	0-23,000/sec.	10 bit —0.15% (—54°C to +65°C)	Serial output; 250,000 bits/sec., uses 28v thermostatic heater control and external power supplies.
A/D — Binary	OC1002 (55 in. ³)	$\pm 2.5\text{v}$; > 1 megohm	0-23,000/sec.	10 bit —0.15% (+10°C to +80°C)	Same as OC1001 with-out thermal housing.
A/D — Binary	OC1501 (100 in. ³)	0 to $+5\text{v}$; 2.2 megohms	0-25,000/sec.	10 bit —0.15% (—20°C to +85°C)	Parallel outputs; includes 28v power supply, no thermal housing.
Multiplexer	OM3000	$\pm 50\text{mv}$ & up	0-200,000/sec.	included in A/D specifications	Sample and hold multiplexer.

Miscellaneous equipment; calibrated over 0-50°C

Data Transmitter (Teletype)	DT101	$\pm 100\text{mv}$ & up; $10,000 \Omega/\text{v}$	0-1200/sec.	8 bit —0.6%	Teletype output; start bit — 8 binary data bits — 2 stop bits.
Data Transmitter (Teletype)	DT102	0 to $+1\text{v}$; $100,000 \Omega/\text{v}$	Up to 2.5 samples per sec. (three digit)	3 digit —0.15%	Same as DT101 except output is three successive 11 bit codes and "space" character per ASC-II.
Data Transmitter (Teletype)	DT103	0 to $+1\text{v}$; $100,000 \Omega/\text{v}$	1.42, 1.56, 2.34 samples per sec. (three digit)	2 digit 1.2% 3 digit 0.15%	Same as DT102 except output is 5 level Baudot code.
A/D — High Speed	OC2010A, B, C	$\pm 0.5\text{v}$ & up; $1,000 \Omega/\text{v}$	0-185,000/sec.	8 bits —0.6% (15°C to 35°C)	Acquisition time < 0.6 μsec ; parallel output.
A/D — Max/Min.			0 to 25,000/sec.	to 0.15%	Encodes only at point of inflection.
A/D — Logarithmic			0 to 100,000/sec.	to 0.3% (or 0.2 db)	True logarithmic encoder up to 60 db dynamic range.
Data Recorder (Punched tape)	DR100P (Binary) DR101P (BCD)	0 to $\pm 100\text{mv}$ & up	0 to 35 and 0 to 150 samples per second	8 bit —0.6% 2-BCD —1.2%	Slower unit uses Invac punch, faster unit uses Tally punch.

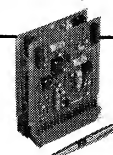
Video Multiplexers, Multiplexed Synchro Encoders and other special units available.



Designers and manufacturers of CAPCODER and CAPLEXER Capacitive Charge Transfer Devices

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3500 PARKDALE AVE. • BALTIMORE, MD. 21211 • AREA CODE 301 367-4001



OC3100A
A/D



OM3100
4 Chan. MULTPLX



OC3200
Ser./Par. Register



OC3400
S&H Amp.



OC1001
A/D



OC1501
A/D



OM3000
MULTPLX



DT101
DT102
DT103
Teletype A/D



OC2010A
A/D



DR100P-35
(INVAC PUNCH)